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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,994	10/21/2003	Hiroyuki Yoshida	LB-4255-5	4547
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EXAMINER				
TRINH, THANH TRUC				
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1795				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/688,994

**Applicant(s)**

YOSHIDA ET AL.

**Examiner**

THANH-TRUC TRINH

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/10/2009 has been entered.

### ***Remark***

1. Claims 1 and 3-19 are pending in the application.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
2. Claims 1, 4-6, 14, 16-17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. (US Patent 5509973).

Regarding claims 1, 4, 14 and 19, as seen in figures 1-7, Ishikawa et al. teaches a solar cell module (see Figures 2-3 or 6) comprising one or more solar cell module bodies (or solar battery 4) captured within one or more frame bodies (e.g. including upper, lower and vertical frame members 6, 7 and 8 - See Abstract) and one or more edge face sealing members (or grading channel members 5) located between a frame body and a solar cell module body for sealing one or more gaps between the frame body and the solar cell module body (see figures 1-6). An edge face sealing member (5) which has an U-shape cross section and undivided structure captured within a frame body is capturing the solar cell module body substantially an entire edge portion perimeter thereof, and formed in frame-like shape in substantially parallel fashion with respect to one or more outer shapes of the solar cell module body (or bodies) as seen in figure 5. The edge face sealing member comprises an upper sealing region (e.g. upper side wall portion 10 of the grading channel member 5) abutting front surface of the solar cell module body; a lower sealing region (e.g. lower side wall portion 10 of the grading channel member 5) abutting back surface of the solar cell module body; a side sealing region (e.g. head portion 11 of the grading channel member 5) abutting edge faces of the solar cell module body, wherein the upper sealing region, the lower sealing region and the side sealing region are made of a same material and formed in an integral and continuous manner (See figures 1-6). The tip portions of the upper sealing

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region and the lower sealing region (or inner wall portions 9) are formed in a bent fashion so as to be inclined toward a groove recess, wherein the distance between the tip portions is substantially the same as a thickness of the edge portion of the solar cell module body (see figures 1-3, 5-6). The upper sealing and the lower sealing regions are disposed so as to open to the outside therefrom at either side from edge portions of the side sealing region. Ishikawa et al. also teaches the frame (6, 7 and 8) mounted on the grading channel 5 (or edge face sealing member as seen in figure 5, col. 4 lines 13-22, 55-61), inner surfaces of the upper and lower sealing regions (or side wall portions 10) facing each other, and a pair of tongue portions (or one projection from each inner surface of the upper and lower side wall portions 10 - upper and lower sealing regions - See Figures 1-6, col. 4 lines 29-32) extending inwardly, wherein the grading channel member 5 (or the edge face sealing member) is fitted on the solar battery 4 (or solar module body) by having its inner surface of the head portion 11 (or edge sealing portion) in contact with the edge of the solar battery 4, inner wall portion 9 held pushed against and in close contact with solar battery 4, and tongues 12 are elastically deformed to have close contact with the solar battery 4 (see col. 4 lines 44-54).

Therefore it is the Examiner's position that the upper sealing region, the lower sealing region and the side sealing region make a tight contact with the solar cell module body when the edge face sealing member is captured within the frame body. In addition to the teaching of tongues 12 being elastically deformed, and having their edges (e.g. edges of the tongues) in close contact with the solar battery 4 (See col. 4 lines 51-54), Ishikawa et al. also shows there is substantially no gap between the upper and lower

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sealing regions of the edge face sealing member (or the upper and lower side wall portion of the grading channel member 5) and the solar cell body 4 as seen in figures 6-7; therefore it would have been obvious to one skilled in the art at the time the invention was made to modify the frame body of the solar cell module of Ishikawa et al so that when the edge face sealing member is captured by the groove of the frame body, the upper sealing region and the lower sealing region are squashed and coming in intimate contact with the front and back surface of the solar cell, and the sealing completely seals the solar cell module body with substantially no gap between one or more upper and lower sealing regions of the edge face sealing member and the one or more front and back surfaces of at least one of the solar cell module body or bodies, respectively, as shown in Figure 6, because such is clearly within the scope of Ishikawa et al's disclosure.

Regarding claim 5, Ishikawa et al. teaches the projections (or tongues) comprises one single-rib. (See Figures 1-3)

Regarding claim 6, Ishikawa et al. teaches the tip portions of the lower and upper sealing regions are disposed in inclined fashion at respectively facing sealing region surfaces. (See Figures 1-3)

Regarding claims 16-17, Ishikawa et al. teaches the edge portions of the side sealing region are curved, cut diagonally so as to produce chamfered surfaces. (See Figures 1-3).

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. (US Patent 5509973) in view of either Stein et al. (US Patent 5071491) or Yoshida et al. (JP2000-297509 with machine English translation provided)

Ishikawa et al. teaches an edge face sealing member as described in claim 1.

Ishikawa et al. does not teach lower sealing region is longer than upper sealing region.

Stein et al. teaches an edge face sealing member with a lower sealing region (or lower seal 26 as seen in figure 7) being longer than an upper sealing region (or upper seal 26 as seen in figure 7).

Yoshida et al. teaches an edge face sealing member (28 in figure 4) having a lower sealing region (or the lower horizontal portion of resin 28) being longer than an upper sealing region (or the upper horizontal portion of resin 28)

It would have been obvious to one skilled in the art at the time the invention was made to modify the edge face sealing member by having a lower sealing region longer than the upper sealing region as taught by Stein et al. or et al. or Yoshida et al.; because Stein et al. teaches such known frame with seal would increase mechanical stability, protection against moisture and provide local fastening of the solar cell equipment (see col. 1 lines 9-15 of Stein et al.) and Yoshida et al. teaches such seal (or resin 28) would improve waterproofness (See paragraph 0024 of Yoshida et al.).

4. Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. (US Patent 5509973), in view of Kataoka et al. (US Patent 6320115)

Ishikawa et al. teaches a solar cell module having an edge face sealing member as applied to claims , 4-6, 8, 14, 16-17 and 19 above .

Ishikawa et al. does not specifically teach a solar cell module body comprising one or more light receiving front glass surfaces, one or more light-receiving-surface sealing resin layer comprising ethylene vinyl acetate, one or more solar cells, one or more back-surface sealing resin layers comprising ethylene vinyl acetate, and one or more weather resistant back-surface sealing films.

Kataoka et al. teaches that it is well known to have a solar cell module body (or solar cell module) comprising a light receiving front glass surface (103), one or more solar cells (or a photovoltaic element 101), sealing resin layers (102) of EVA (or ethylene vinyl acetate) covering light-receiving surface and back-surface of the photovoltaic element, a weather resistant back-surface sealing film (104). See figure 1 and col. 1 line 35 through col. 2 line 14).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the solar cell module body as taught by Kataoka et al. into the solar cell module of Ishikawa et al., because Kataoka et al. teaches that the front glass surface (103) and the back surface sealing (104) would be protective layers, sealing resin (102) which is inexpensive and easy to handle would be used to prevent damaging of the photovoltaic element (101). (See col. 1 line 35 through col. 2 line 15)



5. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. in view of Kataoka et al. and further in view of Kirchmann et al. (US Patent 6073936)

Ishikawa et al. in view of Kataoka et al. teaches a solar cell module edge face sealing member as described in claim 7, wherein Ishikawa et al. teaches the edge face sealing member (or grading channel member 5) having elasticity (or elastically deformed – see col. 4 lines 22-32 and 44-54).

Ishikawa et al. in view of Kataoka et al. does not specifically teach that the material making up the edge face sealing member is elastomer resin; polypropylene or polystyrenic resins; or PP-EPDM or polystyrene-isoprene copolymer.

Kirchmann et al. teaches a sealing member made of SIS (e.g. an elastomer resin of polystyrene-isoprene blend), or EPDM/PP (an elastomer resin of polypropylenic resin). See col. 4 lines 4-16 or Kirchmann et al.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the edge face sealing member of Ishikawa et al. in view of Kataoka et al. by using SIS or PP-EDPM as the sealing material as taught by Kirchmann et al.; because Kirchmann et al. teaches that it would provide a sealing with flexibility or elastic characteristic (See col. 3 lines 3-5 and col. 4 lines 4-16 of Kirchmann et al., and Ishikawa et al. suggests using material having elastic characteristic (See col. 4 lines 22-32 and 44-54 of Ishikawa et al.)

6. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. in view of Kataoka et al. and Kirchmann et al. as applied to claim 9, and further in view of Kotani et al. (US Patent 5414030).

Ishikawa et al. in view of Kataoka et al. and Kirchmann et al. teaches a solar cell module edge face sealing member as described in claim 9.

Ishikawa et al. in view of Kataoka et al. and Kirchmann et al. does not teach using additive such as magnesium silicate or ultraviolet-resistant agents.

With respect to claims 11-12, Kotani et al. teaches using magnesium silicate to an elastomeric resin. (See col. 14 lines 39-68).

With respect to claim 13, Kotani et al. teaches using ultraviolet absorbers, or an ultraviolet-resistant agent to an elastomeric resin. (See col. 11 lines 36-43 and col. 13 lines 22-31).

It would have been obvious to one skilled in the art at the time the invention was made to modify the member of Ishikawa et al. in view of Kataoka et al. and Kirchmann et al. by adding additives such as magnesium silicate and ultraviolet-resistant agent as taught by Kotani et al., because Kotani et al. teaches such additive and agent would improve weather resistance (See col. 13 lines 22-31 of Kotani et al.)

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. in view of either Stein et al.

Ishikawa et al. teaches a solar cell module edge face sealing member as applied to claims 1, 4-6, 14, 16-17 and 19 above, wherein a pair of tongues extending inwardly from an interior surface of side wall portions 10.

The difference between Ishikawa et al. and instant claim is the requirement of the tip portions extending further inwardly than the projections (or tongues).

Stein et al. teaches the tip portions of upper and lower seal 26 extending further than the other projections (See Figure 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the sealing of Ishikawa et al. by having the tip portions extending inwardly further than the projections as taught by Stein et al., because it would provide a frame that can serve as edge protection, local fastening, mechanical stability, and protection against moisture for solar cell equipment. (See col. 1 lines 9-15).

### ***Response to Arguments***

Applicant's arguments filed 5/5/2009 have been fully considered but they are not persuasive.

Applicant argues that Ishikawa does not teach the tongues become flattened out after the edge face sealing members are captured within the frame and there is substantially no gap between the edge sealing member and the solar cell. Applicant also argues that there are no such members in the frame of Ishikawa that would cause the flattening of the tongues 12. However, the Examiner respectfully disagrees. First of

all, Ishikawa teaches causing the tongues to be elastically deformed so that their edges are in close contact with the solar battery edge (See col. 4 lines 13-21). Secondly, Ishikawa teaches there is no gap between the edge sealing member and the solar cell as seen in Figure 6. Therefore it would have been obvious to one skilled in the art at the time the invention was made to modify the frame body of the solar cell module of Ishikawa et al so that when the edge face sealing member is captured by the groove of the frame body, the upper sealing region and the lower sealing region are squashed and coming in intimate contact with the front and back surface of the solar cell, and the sealing completely seals the solar cell module body with substantially no gap between one or more upper and lower sealing regions of the edge face sealing member and the one or more front and back surfaces of at least one of the solar cell module body or bodies, respectively (e.g. as shown in Figure 6), because such is clearly within the scope of Ishikawa et al's disclosure.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THANH-TRUC TRINH whose telephone number is (571)272-6594. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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/Nam X Nguyen/  
Supervisory Patent Examiner, Art Unit 1753

TT  
7/6/2009